

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections contained in the Office Action of June 19, 2008 is respectfully requested.

By this Amendment, new claims 24-26 have been added. Thus, claims 20, 21 and 23-26 are currently pending in the application. No new matter has been added by these amendments.

On pages 3-5 of the Office Action, the Examiner rejected claims 20 and 23 under 35 U.S.C. § 102(b) as being anticipated by Antaki et al. (US 6,015,272). For the reasons discussed below, it is respectfully submitted that the present claims are clearly patentable over the prior art of record.

Independent claim 20 recites an artificial cardiac pump comprising a housing, an axial body fixed in the housing, an impeller arranged so as to be rotatable around the axial body, with *the axial body extending through the impeller*, and a driving mechanism for rotating the impeller such that blood taken in from a front side of the impeller is force-fed to a rear side of the impeller along an axial direction of the impeller. The artificial cardiac pump of claim 20 also includes *a front-side fixed body connected to a front side of the axial body*, a rear-side fixed body connected to a rear side of the axial body *such that the axial body is sandwiched between the front-side fixed body and the rear-side fixed body*, a straightening board protruding from an inner wall of the housing at the front side of the impeller, with the front-side fixed body being fixed at the straightening board, and a board-shaped diffuser protruding from the inner wall of the housing at the rear side of the impeller, with the rear-side fixed body being fixed at the board-shaped diffuser.

Further, claim 20 recites that the impeller includes a sleeve and impeller wing-components protruding from an outer peripheral surface of the sleeve, with the sleeve being arranged such that an inner peripheral surface of the sleeve faces an outer peripheral surface of the axial body across a gap, a front-end surface of the sleeve faces a rear-end surface of the front-side fixed body across a gap, and such that a rear-end surface of the sleeve faces a front-end surface of the rear-side fixed body across a gap. Claim 20 also recites that the driving mechanism comprises polar anisotropic permanent magnets installed in the sleeve and a rotary magnetic flux generator installed in the housing so as to surround an outer peripheral portion of

the impeller. In addition, claim 20 recites that the sleeve includes a first magnet arranged to face the rear-end surface of the front-side fixed body, and *the front-side fixed body includes a second magnet arranged to face the front-end surface of the sleeve*, with the first and second magnets being permanent magnets, and with the first and second magnets being arranged such that a pole of the first magnet faces a same pole of the second magnet so as to produce a repulsion force in an axial direction of the axial body between the first magnet and the second magnet.

Antaki discloses a fluid pump which, as shown in Fig. 34, includes a stator 320 surrounded by an impeller 322 within a housing 324. Antaki also discloses permanent magnets 329 and 330 in the stator 320 and permanent magnets 331 and 332 in the impeller for supporting the impeller. However, Antaki does not disclose all of the features required by independent claim 20.

In particular, it is first noted that on page 4 of the Office Action, the Examiner indicates that a portion of the stator 320 at the inlet 326 of Antaki (Fig. 34) corresponds to the front-side fixed body of claim 20. Further, on page 5 of the Office Action, the Examiner indicates that the magnet 329 of Antaki corresponds to the second magnet of the front-side fixed body as recited in claim 20.

Antaki does not explicitly disclose a front-side fixed body connected to a front side of the axial body. However, the Examiner appears to take the position that the front end portion of the stator 320 up to at least the magnet 329 corresponds to the front-side fixed body of claim 20. In this regard, it is noted that independent claim 20 recites an axial body extending through the impeller, a front-side fixed body connected to a front side of the axial body, with the axial body being sandwiched between the front-side fixed body and the rear-side fixed body, and that the front-side fixed body includes a second magnet arranged to face the front-end of the sleeve. However, if the front end portion of the stator 320 up to at least the magnet 329 is interpreted to correspond to be a “front-side fixed body,” then the remaining portion of the stator 320 sandwiched between the “front-side fixed body” and the rear-side portion (*i.e.*, the axial body) does not extend through the impeller, as required by claim 20.

Alternatively, if Antaki is interpreted such that the portion of the stator 320 which extends through the impeller corresponds to the axial body of claim 20, and the front and rear

end portions of the stator 320 which sandwich the “axial body” portion of the stator 320 correspond to the front-side and rear-side fixed bodies of claim 20, then Antaki does not disclose a front-side fixed body which includes a second magnet because, under such an interpretation, the front-side portion of the stator which sandwiches the portion of the stator that extends through the impeller does not include the magnet 329.

Therefore, Antaki does not disclose an artificial pump which includes all of the following features: an axial body extending through the impeller; a front-side fixed body connected to a front side of the axial body with the axial body being sandwiched between the front-side fixed body and the rear-side fixed body; and the front-side fixed body including a second magnet.

Therefore, it is respectfully submitted that independent claim 20 is clearly allowable over the prior art of record. It is also respectfully submitted that claims 21 and 23-26 are also allowable at least by virtue of their dependency from claim 20.

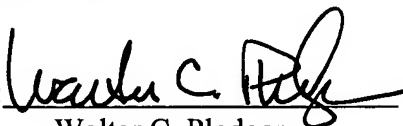
In addition, the Examiner’s attention is directed to the dependent claims which further define the present invention over the prior art. For example, dependent claim 26 recites that said first and second magnets are arranged such that *said pole of said first magnet faces said same pole of said second magnet in the axial direction of said axial body*. In this regard, it is noted that Antaki only discloses that the poles of the magnets face each other in the radial direction, and therefore Antaki does not disclose that the pole of the first magnet faces the same pole of the second magnet in the axial direction.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice to that effect is respectfully solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

Takeshi OKUBO et al.

By: 

Walter C. Pledger
Registration No. 55,540
Attorney for Applicants

WCP/lkd
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
September 19, 2008